

IWMI in Africa: Ongoing Research and Findings

International Water Management Institute, March 2008

IWMI's work in Africa began in the early 1990s. Critical challenges relating to land and water management have led IWMI to expand its research program on the continent. Water scarcity and poverty, low land and water productivity linked to land degradation and poor water quality, health and nutrition concerns, droughts, floods and transboundary conflicts in water management are some of the issues that are affecting the livelihoods of the rural poor in Africa. IWMI is addressing these questions in several river basins (Nile, Volta and Limpopo) through its three regional offices for West, East and Southern Africa based in Ghana, Ethiopia and South Africa, respectively. The research program responds to NEPAD's desire to operationalize Pillar I (land and water management) of the Comprehensive Africa Agriculture Development Program (CAADP).

Guiding investment in agricultural water in sub-Saharan Africa

Investment in water is needed to keep up with global demand for agricultural products and adapt to changing food preferences and societal demands, to reduce poverty, to adapt to urbanization, industrialization, and increasing allocations to the environment and to respond to climate change. Climate variability and extreme events will require water resources development, water storage facilities, further irrigation development, and changes in the operation of existing schemes. The findings of two IWMI-led key research programs completed in 2007—the Comprehensive Assessment of Water Management in Agriculture (CA) and the Investment in Agricultural Water for Poverty Reduction and Economic Growth in sub-Saharan Africa (a collaborative program of the World Bank, FAO, IFAD, ADB and IWMI, in partnership with NEPAD) should guide future interventions in sub-Saharan Africa.

The CA has critically evaluated the benefits, costs and impacts of the past 50 years of water development, the water management challenges communities are facing today, and solutions people have developed. The results of the CA will support better investment and management decisions in water and agriculture in the near future and over the next 50 years. The synthesis report of the Agricultural Investment Study analyzed the contribution to date of agricultural water management to poverty reduction and growth in sub-Saharan Africa, the reasons for its slow expansion and apparently poor track record (including incorrect perceptions about costs and poor performance), as well as suggested ways in which increased investment in agricultural water management could make a sustainable contribution to realizing the untapped growth potential and enhancing prosperity in the continent.

The importance of multiple use water services (MUS) for economic growth

Household water needs extend well beyond domestic needs, i.e., water for drinking, cooking and washing purposes. Water is also a key ingredient for economic growth at a household level. Water supply schemes are not typically designed or planned to cater for multiple uses. Thus, the provision of water for domestic uses only will have limited impacts on economic growth. Likewise, infrastructure for agricultural water uses are often not designed taking into account domestic uses. However, irrigation schemes can facilitate multiple uses of water that combine crop production with livestock, fisheries, and other income-generating activities to enhance rural incomes and sustainability.

IWMI leads an innovative global comparative study on analyzing and demonstrating the potential for multiple-use water services delivery as a cost-effective way to use water for poverty alleviation and gender equity while meeting the growing needs for agricultural products. Findings from the research have influenced the adoption of the MUS concept and changes in the planning and design of water systems by several organizations worldwide as a promising pathway for using water for rural and peri-urban development, poverty alleviation and gender equality, at both local and national levels.





IWMI research through a basin approach: The Nile Basin

The Nile Basin and East Africa, in general, is one of the poorest regions in SSA, and water is one of the most limiting factors for economic growth and development. The IWMI office in Addis Ababa was set up in 2003 to work closely with governmental and non-governmental organizations in the region on water resources management research in support of development efforts in the East African countries and the Nile Basin.

IWMI in partnership with other organizations currently has 12 ongoing research projects in the Nile Basin and East Africa to identify the key issues and problems faced by people in the region. The IWMI-led Nile Basin Focal Project shares the vision of the Nile Basin Initiative in looking deeper into high impact interventions to combat poverty through analysis of water availability and access, production systems and institutions. Some of the other projects carried out look into areas such as the upstream-downstream interactions in the Nile Basin, the implementation of decision support tools, water allocation issues and improving the performance of irrigated agriculture.

Through the research projects several useful outputs and outcomes have been generated or will emerge in the near future. Ethiopia's GIS-based irrigation database was developed for the first time, the impact of irrigation on household poverty was analyzed, the linkage of irrigation to GDP in Ethiopia was established and the causes of failures of small-scale irrigation in two regions in Ethiopia were studied. Under the project Improving Performance of Irrigated Agriculture in SSA, also known as APPIA, a methodology was developed and used to assess the performance of farmer-managed irrigation schemes, and suggested changes have led to successful improvements in irrigation management. IWMI has also been contributing to specific institutional capacity development efforts in Ethiopia such as the setting up of a national irrigation steering committee, chairing the National Water Research Advisory Council and serving on various steering committees.



New IWMI research: Rethinking storage for climate change adaptation

The impacts of climate change on water resources and the subsequent impact on food production, livelihoods and ecosystems have led IWMI to commence work in this area in the Africa region, with particular reference to Ethiopia and Ghana. IWMI in collaboration with German institutes and Ethiopian and Ghanaian institutes will consider how water storage can play a key role in climate change adaptation.

"Storage options" will be reviewed creatively, considering off-stream reservoirs, on-farm ponds and networks of multi-purpose small reservoirs, groundwater storage, water storage in the root zone through a variety of water harvesting techniques and soil moisture conservation measures, 'stored' in-stream channels and utilized via river pump irrigation, stored 'virtually' – as the water used for food production. Each type of storage has its own niche. Water storage improves the ability of the rural poor to cope with climate shocks by increasing agricultural productivity, cope with climate change and variability as well as increasing resilience. The research will review how these storage options will function under a range of climate change scenarios, what their impact will be and under which circumstances they will be appropriate options. The research combines biophysical and social science methods to arrive at integrated policy-relevant recommendations.